

## ONION PRODUCTION SURVEY FOR MALHEUR COUNTY, OREGON AND IDAHO - 2008

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### Introduction

Growers in Malheur County, Oregon, and Idaho were surveyed regarding onion production. Resources were not available to survey growers for production practices on all crops, so onion was chosen as most representative of Malheur County agriculture. Previous studies identified onion production as one of the primary sources of nitrate and Dacthal (DCPA metabolite) movement into groundwater in Malheur County. Dacthal herbicide has since been replaced with an herbicide less likely to move through the soil profile into ground water. However, the question to be answered was whether growers have been able to better utilize nitrogen.

### Results

All surveyed growers in Malheur County and most growers in Idaho were using soil testing to determine residual levels of nitrogen prior to planting onion (Table 1). This is up from 62 percent in 1989. The percent of growers using tissue (root) testing for nitrogen management during the growing season remained constant, but there was a trend for growers who are new to onion production to use the technique more than growers with a long history of onion production (Fig. 1).

Table 1. Onion crop survey for Malheur County, Oregon, and Idaho, February 2008, compared to 1989 Malheur County survey.

Survey area	Malheur Co.	Idaho	Malheur Co. 1989
Onion acreage represented	3,328	3,001	4,167
Average onion yield	789 cwt	783 cwt	621 cwt
Average number of years growing onions	28.7	26.8	25.8
Average onion acreage/grower	128	150	93
% of growers soil testing	100%	95.5%	62%
% of growers using tissue testing	34.6%	22.7%	33%
Number of insecticide applications for thrips/year	5.5	5.5	3.6
Number of fungicide applications/year	3.3	3.4	3.6

Fall-applied nitrogen was down by 17 percent in 2007 compared with 1989 (Table 2). The number of side-dress nitrogen applications has increased in Oregon from 1.6 to 2.25 times as growers distribute nitrogen more uniformly throughout the growing season. The average amount of nitrogen applied at each side-dressing application has been reduced from 116 lbs N/acre in 1989 to 78 lbs N/acre in 2007. The total amount of applied nitrogen is 9.5 percent lower in 2007 vs. 1989, from 284 lbs N/acre to 257 lbs N/acre.

Table 2. Nitrogen use in furrow-irrigated onions for Malheur County, Oregon, and Idaho, February 2008, compared to 1989 Malheur County survey.

	Malheur Co.	Idaho	Malheur Co. 1989
Average onion yield (furrow)	769 cwt	782 cwt	621 cwt
Fall applied N (lb/acre)	81	105	98
Number of sidedress applications	2.25	1.6	1.6
Pounds N applied/sidedress application	78	97	116
Total sidedressed N	176	155	186
Total applied N	257	260	284

In addition, about 20 percent of the onion acreage in 2007 is irrigated by drip rather than the conventional furrow irrigation used by all growers in 1989 (Table 3). This system uses less water and other inputs. Growers using drip irrigation reported using 175 lbs N/acre versus furrow irrigators who were using 257 lbs N/acre.

Table 3. Nitrogen use in drip-irrigated onions for Malheur County, Oregon, and Idaho, February 2008.

	Malheur Co.	Idaho
Average onion yield (drip)	814 cwt	788 cwt
Fall applied N (lb/acre)	40	70
Number of N applications through system	9	9
Average pounds N injected/application	15	9.4
Total N applied through drip system	135	85
Total applied N	175	162

Onion productivity per applied N was 307 lbs of onions/lb of N for furrow-irrigated onion and 465 lbs of onions/lb of N for drip-irrigated onion (Table 4). This compares to 219 lbs of onions/lb of N in 1989. If nitrogen use on the drip-irrigated acreage in Malheur County is factored into overall nitrogen use, then total nitrogen use for onion production is reduced to 240.6 lbs N/acre. This is a 15 percent reduction in nitrogen use for onion growers in Malheur County. Growers using drip irrigation applied nitrogen 9 times through their drip system compared to 2.25 times as sidedressed nitrogen under furrow

irrigation practices. The number of insecticide applications increased from 3.6 to 5.5, due to increased resistance to insecticide.

Table 4. N use efficiency of furrow- versus drip-irrigated onion production for Malheur County, Oregon, and Idaho, February 2008, compared to 1989 survey.

	Malheur Co.	Idaho	Malheur Co. 1989
Yield (cwt) – furrow	789	783	921
Total applied N – furrow	257	260	284
Yield (lbs onions/lb applied N)	307	301	219
Yield (cwt) – drip	814	788	-
Total applied N – drip	175	162	-
Yield (lbs onions/applied N)	465	486	-

### Conclusions

The results of this survey suggest that while nitrogen use has decreased slightly (15%), nitrogen efficiency has increased dramatically from 219 lbs onions/lb of N to 307 lbs onions/lb of N for furrow-irrigated onions. It is even better for onions grown under drip irrigation. Some of this increase is probably due to higher yielding onion varieties, but some is due to better irrigation and nitrogen use practices.

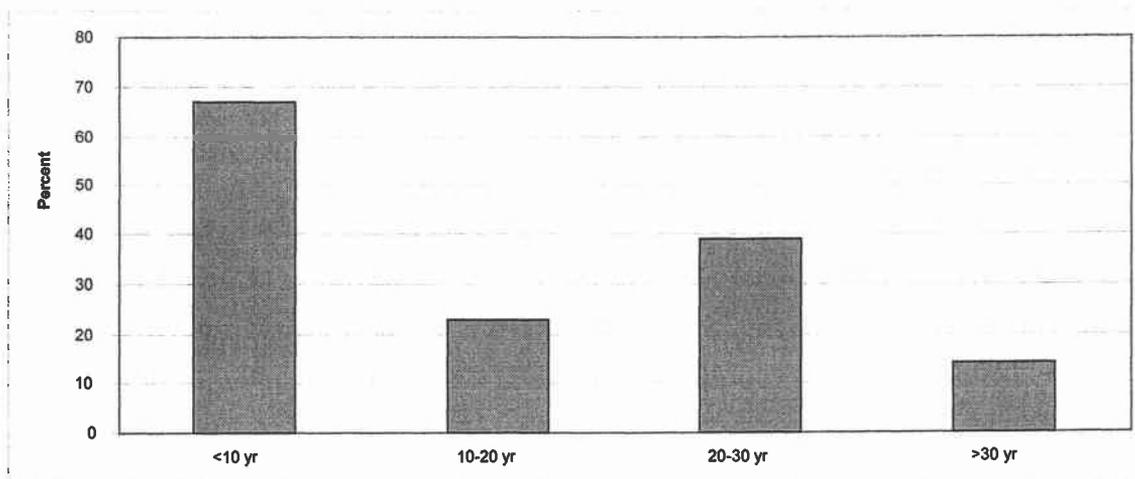


Figure 1. Percent of growers using tissue testing on onions, arranged by number of years they have produced onions in Malheur County, Oregon, and Idaho, 2008.